be used to identify whether the new video is a highlight video. For videos stored on the video repository, it is often useful to allow users to search for and identify videos of interest. As such, the determination of a sports highlight video is useful for identifying a searchable keyword for the video, and can be used to update a tag associated with the video or to place the video in a category for sports highlights.

2) Identifying Highlight Portions of a Video: Though to this point the length of the videos as a whole has been not considered, video highlights are typically presented as a portion of a much longer video for an entire sporting event. For example, an entire video of a game can be assessed to determine which portions are the highlights. To achieve this, those skilled in the art will realize that the entire video can be broken into individual portions of the video, and the individual portions can be identified as highlights or non-highlights using the trained classifiers, as described above. The portions are determined by splitting the sports video into portions on a static determination such as on a temporal basis, by every 5 or 10 minutes or on the basis of detected shots, such as every 5 or 10 shots. Alternatively, the portions are determined by using a "rolling" portion determination. That is, a "rolling" determination could use a window of a determined length, and use the window to capture portions of the video. For example, a window of a length of 5 minutes could capture a first portion comprising the first 5 minutes, and a second portion comprising minutes 2-6. The identified highlight portions from the video could then be used to identify highlights for a user, or may be concatenated to form a "highlights only" video clip.

While this disclosure relates to methods of identifying highlights in sports videos, the use of low-level feature extraction, event modeling, and event vectors can be used to identify events and classify according to a chosen property for any type of video with a set of recurring events. Since the features are low-level, the techniques do not require timely re-modeling for individual applications. For example, these techniques could be applied to traffic cameras, security cameras, and other types of video to identify recurring events of interest.

The present disclosure has been described in particular detail with respect to one possible embodiment. Those of skill in the art will appreciate that the disclosure may be practiced in other embodiments. First, the particular naming of the components and variables, capitalization of terms, the attributes, data structures, or any other programming or structural aspect is not mandatory or significant, and the mechanisms that implement the disclosure or its features may have different names, formats, or protocols. Also, the particular division of functionality between the various system components described herein is merely for purposes of example, and is not mandatory; functions performed by a single system component may instead be performed by multiple components, and functions performed by multiple components may instead performed by a single component.

Some portions of above description present the features of the present disclosure in terms of algorithms and symbolic representations of operations on information. These algorithmic descriptions and representations are the means used by those skilled in the data processing arts to most effectively convey the substance of their work to others skilled in the art. These operations, while described functionally or logically, are understood to be implemented by computer programs. Furthermore, it has also proven convenient at times, to refer to these arrangements of operations as modules or by functional names, without loss of generality.

Unless specifically stated otherwise as apparent from the above discussion, it is appreciated that throughout the description, discussions utilizing terms such as "determining" or "displaying" or the like, refer to the action and processes of a computer system, or similar electronic computing device, that manipulates and transforms data represented as physical (electronic) quantities within the computer system memories or registers or other such information storage, transmission or display devices.

Certain aspects of the present disclosure include process steps and instructions described herein in the form of an algorithm. It should be noted that the process steps and instructions of the present disclosure could be embodied in software, firmware or hardware, and when embodied in software, could be downloaded to reside on and be operated from different platforms used by real time network operating systems.

The present disclosure also relates to an apparatus for performing the operations herein. This apparatus may be specially constructed for the required purposes, or it may comprise a general-purpose computer selectively activated or reconfigured by a computer program stored on a computer readable medium that can be accessed by the computer. Such a computer program may be stored in a computer readable storage medium, such as, but is not limited to, any type of disk including floppy disks, optical disks, CD-ROMs, magnetic-optical disks, read-only memories (ROMs), random access memories (RAMs), EPROMs, EEPROMs, magnetic or optical cards, application specific integrated circuits (ASICs), or any type of non-transient computer-readable storage medium suitable for storing electronic instructions. Furthermore, the computers referred to in the specification may include a single processor or may be architectures employing multiple processor designs for increased computing capability.

The algorithms and operations presented herein are not inherently related to any particular computer or other apparatus. Various general-purpose systems may also be used with programs in accordance with the teachings herein, or it may prove convenient to construct more specialized apparatus to perform the required method steps. The required structure for a variety of these systems will be apparent to those of skill in the art, along with equivalent variations. In addition, the present disclosure is not described with reference to any particular programming language. It is appreciated that a variety of programming languages may be used to implement the teachings of the present disclosure as described herein, and any references to specific languages are provided for disclosure of enablement and best mode of the present disclosure.

The present disclosure is well suited to a wide variety of computer network systems over numerous topologies. Within this field, the configuration and management of large networks comprise storage devices and computers that are communicatively coupled to dissimilar computers and storage devices over a network, such as the Internet.

Finally, it should be noted that the language used in the specification has been principally selected for readability and instructional purposes, and may not have been selected to delineate or circumscribe the inventive subject matter. Accordingly, the disclosure of the present disclosure is intended to be illustrative, but not limiting, of the scope of the disclosure, which is set forth in the following claims.

What is claimed is:

1. A computer-implemented method for identifying sports highlights within videos, the method comprising: